

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID J. WETHERALL, STEFAN R. SAVAGE,
and THOMAS E. ANDERSON

Appeal 2007-3281
Application 09/777,550
Technology Center 2100

Decided: December 11, 2007

Before LANCE LEONARD BARRY, ST. JOHN COURTENAY III, and
STEPHEN C. SIU, *Administrative Patent Judges*.

SIU, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's
Final Rejection of claims 2-14, 16-31, and 36-48. We have jurisdiction
under 35 U.S.C. § 6(b). We affirm in part.

A. INVENTION

1 The invention at issue involves fending off undesirable network traffic in a network (Spec. 1.) Typically, detecting and filtering out data packets associated with a spoof source address has been problematic as spoof instances are intermixed with non-spoof instances (*Id.* 2.)

In contrast, Appellants' invention provides a network system in which routing data packets from spoof source addresses are identified using spatial consistency, destination consistency, migration consistency, and temporal consistency (*Id.* 3.)

B. ILLUSTRATIVE CLAIMS

Claims 1 and 2, which further illustrate the invention, follow.

1. A network comprising:
a plurality of network nodes;
a plurality of routing devices to route network traffics between selected ones of said network nodes; and
director coupled to said routing devices to determine whether selected instances of source addresses of packets routed by said routing devices are spoof source addresses, based at last in part on one or more consistency measures.

2. The network of claim 1, wherein the director bases said determination on at least spatial distribution profiles of said source addresses, and in view of at least one reference source address spatial distribution profile.

C. REJECTION

Claims 1-34 and 36-48 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,321,338 (“Porras”).

II. CLAIM GROUPING

1 “When multiple claims subject to the same ground of rejection are argued as a group by Appellants, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of Appellants to separately argue claims which Appellants have grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately.” 37 C.F.R. § 41.37(c)(1)(vii) (2005).¹

Here, Appellants do not argue for the patentability of claims 1 and 15 (the first group). (App. Br. 3). In addition, Appellants argue claims 2, 16, and 34, which are subject to the same ground of rejection, as a second group²

¹ We cite to the version of the Code of Federal Regulations in effect at the time of the Appeal Brief. The current version includes the same rules.

² Appellants place claims 16 and 34 in different headings in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 2.

(App. Br. 3-4); claims 3, 17, 19, and 36 as a third group³ (*Id.* 4-6); claims 4, 20, 21, 38, and 39 as a fourth group⁴ (*Id.* 6-7); claims 5 and 23 as a fifth group⁵ (*Id.* 7-8); claims 6, 24, and 41 as a sixth group⁶ (*Id.* 8); claims 7 and 27 as a seventh group⁷ (*Id.* 9-10), claims 8, 28-30, and 44-46 as an eighth group⁸ (*Id.* 10-11); claim 9 as a ninth group (*Id.* 11); claim 10 as a tenth group (*Id.* 12); claim 11 as a eleventh group (*Id.* 13); claims 18 and 37 as an twelfth group (*Id.* 5); claims 22 and 40 as a thirteenth group (*Id.* 6-7); claims

³ Appellants place claims 17, 19, and 36 in different headings in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 3.

⁴ Appellants place claims 20, 21, 38 and 39 in different headings in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 4.

⁵ Appellants place claim 23 in a different heading in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 5.

⁶ Appellants place claims 24 and 41 in different headings in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 6.

⁷ Appellants place claim 27 in a different heading in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 7.

⁸ Appellants place claims 28-30 and 44-46 in different headings in the Appeal Brief but rely on the same argument with respect to deficiencies in Porras as applied against claim 8.

25 and 42 as a fourteenth group (*Id.* 8-9); and claims 26 and 43 as a fifteenth group (*Id.* 9.)

In addition, Appellants do not present arguments pertaining to claims 12-14, 31, 32, 33, 47, and 48. When the patentability of dependent claims in particular is not argued separately, the claims stand or fall with the claims from which they depend. *In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986); *In re Sernaker*, 702 F.2d 989, 991 (Fed. Cir. 1983). Claims 47 and 48 depend from claim 34 (of the second group) and are therefore included in the second group. Claim 21 depends from claim 28 and is included in the eighth group. Claims 12-14, 32, and 33 depend from claim 1 or claim 15 and are therefore included in the first group.

III. CLAIMS 1, 12-15, 32, AND 33

We select claim 1 as the sole claim on which to decide the appeal of the first group. Appellants do not argue for patentability of claim 1. Therefore, we affirm the Examiner's rejection of claim 1 *pro forma*, and of claims 12-15, 32, and 33, which fall therewith.

IV. CLAIMS 2, 3, 16-19, 34, AND 36-48

"Rather than reiterate the positions of parties *in toto*, we focus on the issue therebetween." *Ex Parte Filatov*, No. 2006-1160, 2007 WL 1317144, at *2 (BPAI 2007).

Appellants argue claims 2, 16, and 34 as a group. Claims 3, 17-19, and 36-48 depend from claim 2, 16, or 34. We select claim 2 as the sole claim on which to decide the appeal of the group.

Here, the Examiner finds that Porras discloses each element of the claimed invention (Ans. 14-16.) Appellants dispute the Examiner's position and assert that Porras fails to disclose a determination based upon spatial distribution profiles. (App. Br. 3.)

In response, the Examiner asserts that Porras discloses "continuous measures" (col. 5, ll. 36-51; col. 6, ll. 37-58) and further equates the "continuous measures" of Porras with Appellants' "spatial distribution profile." (Ans. 15).

Our analysis begins with construing the claim limitations at issue. "Claims must be read in view of the specification, of which they are a part." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc). However, "limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989)).

1 Here, claim 2 recites in pertinent part the following limitations: "the director bases said determination on at least spatial distribution profiles of said source address, and in view of at least one reference source address spatial distribution profile." Reading the representative claim in view of the Specification, the limitations require a spatial distribution profile pertaining to a spatial distribution of observed source addresses (e.g., over routing

domains) (Spec. 8.) Giving the representative claim the broadest, reasonable construction, the limitations require determining that instances of source addresses of packets routed by routing devices are spoof source addresses based on a spatial distribution profile of the source addresses. Giving the term “spatial distribution profile” the broadest, reasonable interpretation based on the plain meaning of the terms, we find that a “spatial distribution profile” includes a profile that describes the relative placement or location of source addresses in space (“distribution” in space) – i.e., the relative geographical placement of sources in a network.

Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims. “[A]nticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim” *In re King*, 801 F.2d 1324, 1326 (Fed. Cir. 1986) (citing *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984)). “[A]bsence from the reference of any claimed element negates anticipation.” *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571 (Fed. Cir. 1986).

As the Examiner states, Porras discloses “continuous measures” (col. 5, ll. 65-67). However, Porras discloses that the “continuous measures” are values that “include inter-event time, . . . , counting measures such as the number of errors of a particular type observed in the recent past, the volume of data transfers over a period of time, and network traffic measures.”

(Col. 5, l. 66 – col. 6, l. 5). Thus, we find Porras fails to disclose that the “continuous measures” include information pertaining to the relative placement or location of source addresses in space (i.e., “spatial distribution”).

The absence of the spatial distribution profile negates anticipation. Therefore, we reverse the anticipation rejection of claims 2, 16, and 34 and of dependent claims 3, 17-19, and 36-48.

V. CLAIMS 4, 5, AND 20-23

Appellants argue claims 4, 20, and 21 as a group. Claims 5, 22, and 23 depend from claim 4 or claim 20. We select claim 4 as the sole claim on which to decide the appeal of the group.

Appellants dispute the Examiner’s finding that Porras discloses each element of claim 4 and argues that Porras fails to disclose the determination being based on at least destination source address range distribution profiles. (App. Br. 6). In response, the Examiner asserts that Porras discloses “categorical measures” (Ans. 18.) The Examiner further equates the “categorical measures” of Porras with the recited destination source address range distribution profile (*Id.*)

Giving the representative claim the broadest, reasonable construction, the limitations require determining that instances of source addresses of packets routed by routing devices are spoof source addresses based on a destination source address range (DSAR) distribution profiles of the source

addresses. Giving the term “destination source address range distribution profile” the broadest, reasonable interpretation based on the plain meaning of the terms, we find that a “destination source address range distribution profile” includes a profile that describes the range of source addresses seen at a destination node in relation to ranges of source addresses seen at other destination nodes (i.e., the “distribution” of ranges of source addresses seen at different destination nodes).

As the Examiner asserts, Porras discloses “categorical measures” which includes “values from a discrete, nonordered set of possibilities.” (Col. 5, ll. 52-53.) Porras further discloses that the “categorical measures” includes “network source and destination addresses, commands . . . , protocols, error codes . . . , and port identifiers. (Col. 5, ll. 55-59.) However, none of these elements disclosed by Porras appear to equate with a “distribution” of ranges of source addresses seen at different destination nodes.

The absence of the destination source address range distribution profile negates anticipation. Therefore, we reverse the anticipation rejection of claims 4, 20, 21, and of dependent claims 5, 22, and 23.

VI. CLAIMS 6, 7, AND 24-27

Appellants argue claims 6 and 24 as a group. Claims 7 and 25-27 depend from claim 6 or claim 24. We select claim 6 as the sole claim on which to decide the appeal of the group.

Appellants dispute the Examiner's finding that Porras discloses each element of claim 6 and argues that Porras fails to disclose the determination being based on "migration distribution profiles for those source addresses that are based at least in part [on] a reference migration distribution profile." (App. Br. 8). In response, the Examiner asserts that Porras discloses "continuous measures" (Ans. 20.) The Examiner further equates the "continuous measures" of Porras with the recited "migration distribution profiles" (*Id.*)

Giving the representative claim the broadest, reasonable construction, the limitations require determining that instances of source addresses of packets routed by routing devices are spoof source addressed based on a migration distribution profile of the source addresses. Giving the term "migration distribution profile" the broadest, reasonable interpretation based on the plain meaning of the terms, we find that a "migration distribution profile" includes a profile that describes the distribution of changes in routing paths (i.e., "migration") of data packet transmission across domains.

As the Examiner asserts, Porras discloses "continuous measures" which includes "inter-event time, . . . , counting measures such as the number of errors of a particular type observed in the recent past, the volume

of data transfers over a period of time, and network traffic measures.” (Col. 5, l. 66 – col. 6, l. 5). However, we find Porras fails to disclose that the “continuous measures” includes information pertaining to the distribution of changes in routing paths (i.e., “migration”) of data packet transmission across domains.

The absence of the migration distribution profile negates anticipation. Therefore, we reverse the anticipation rejection of claims 6, 24, and 41 and of dependent claims 7 and 25-27.

VII. CLAIMS 10 AND 11

Appellants dispute the Examiner’s finding that Porras discloses each element of claim 10 and argues that Porras fails to disclose that “filtering actions are to be taken to filter out packets with source addresses that are deemed to be spoofed source addresses.” (App. Br. 12). In response, the Examiner asserts that although Porras does not disclose filtering packets, Porras nevertheless implies filtering actions by disclosing monitoring routing devices, detecting spoofing, receiving reports to reconfigure the monitoring (Ans. 26).

The Examiner states that Porras fails to disclose filtering. In addition, based on the record before us, it does not appear that Porras discloses the claim limitations. Specifically, it does not appear that monitoring devices, detecting spoofing, or reconfiguring monitoring based on received reports equates with filtering out packets.

Therefore, we reverse the anticipation rejection of claim 10. Because claim 11 depends upon claim 10, we also reverse the Examiner's anticipation rejection of claim 11.

VIII. CLAIMS 8 AND 28-31

Appellants argue claims 8 and 28-30 as a group. We select claim 8 as the sole claim on which to decide the appeal of the group.

Appellants dispute the Examiner's finding that Porras discloses each element of claim 8 and argues that Porras fails to disclose "using timing distribution profiles for the packets" (App. Br. 10.) In response, the Examiner asserts that Porras discloses "continuous measures" (Ans. 23.) The Examiner further equates the "continuous measures" of Porras with the recited "timing distribution profiles" (*Id.*)

Giving the representative claim the broadest, reasonable construction, the limitations require determining that instances of source addresses of packets routed by routing devices are spoof source addresses based on a timing distribution profile of the source addresses. Giving the term "timing distribution profile" the broadest, reasonable interpretation based on the plain meaning of the terms, we find that a "timing distribution profile" includes a profile that describes the timing of data packet transmission.

As the Examiner asserts, Porras discloses "continuous measures" which includes "inter-event time (e.g., difference in time stamps between consecutive events from the same stream), . . . , the volume of data transfers

over a period of time” (Col. 5, l. 66 – col. 6, l. 4). Porras further discloses the “continuous measures” as including “intensity measures” that “reflect the intensity of the event stream (e.g., number of ICMP⁹ packets) over specified time intervals (e.g., 1 minute, 10 minutes, and 1 hour).” (Col. 6, ll. 21-23). Because Porras discloses a profile that describes timing of data packet transmission, we agree with the Examiner that Porras discloses a “timing distribution profile.”

Because Appellants have failed to demonstrate that the Examiner erred in rejection claim 8, we affirm the rejection of claim 8 and of claims 28-31, which fall therewith.

IX. CLAIM 9

Appellants dispute the Examiner’s finding that Porras discloses each element of claim 9 and argues that Porras “does not teach that spoofed source addresses should be identified based on these types of timing distribution profiles.” (App. Br. 11.) In response, the Examiner asserts that Porras discloses “a profile engine using scores to determine how close a profile, such as a profile generated from a continuous measure, corresponds to a historical profile.” (Ans. 25.)

Giving the representative claim the broadest, reasonable construction, the limitations require a timing distribution profile of the source addresses having a historical timing distribution profile for a particular source address.

⁹ Internet Control Message Protocol

Giving the term “timing distribution profile” the broadest, reasonable interpretation based on the plain meaning of the terms, we find that a “timing distribution profile” includes a profile that describes the timing of data packet transmission.

As the Examiner asserts and as set forth above, Porras discloses “continuous measures” which includes profiles containing a “timing distribution profile.” Also, Porras further discloses that the profiles include a statistical score that “represents how closely currently observed usage corresponds to the established patterns of usage. (Col. 5, ll. 38-41). Porras further discloses that profiles are compared “to a historically adaptive deviation.” (Col. 6, ll. 63-64). Because Porras discloses a profile that describes established patterns of usage and historical data, we agree with the Examiner that Porras discloses a historical timing distribution profile.

We also disagree with Appellants’ assertion that Porras fails to disclose that “spoofed source addresses should be identified based on these types of timing distribution profiles.” (App. Br. 11.) Porras discloses that the profile contains the timing distribution profile as set forth above and that the profile is used to “monitor for attempts to penetrate or interfere with the domain’s operation” (col. 7, ll. 29-31); scan “the event stream for events that represent attempted exploitations of known attacks against the service, or other activity that stands alone as warranting a response from the monitor” (col. 7, ll. 33-35); “scan the aggregate of intrusion reports from service monitors in an attempt to detect more global coordinated attack scenarios or

scenarios that exploit interdependencies among network services” (col. 7, ll. 36-38); or to “detect ‘address spoofing’” (col. 14, ll. 16-17). In each of these scenarios, Porras discloses identifying attacks, including “address spoofing.”

Because Appellants have failed to demonstrate that the Examiner erred in rejecting claim 9, we affirm the anticipation rejection of claim 9.

IV. ORDER

In summary, the rejection of claims 1, 8, 9, 12-15, and 28-33 under § 102(e) is affirmed. The rejection of claims 2-7, 10, 11, 16-27, and 34-48, however, is reversed.

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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